

# BrR 6.8 COSLAB Rating Example

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LADOTD Load Rating

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# Helpful hints about BrR

- If you are on a certain tab or data entry field, you can hit the F1 key to bring up the help screen that is specific to that data entry field you are working with
- After you enter data, hit “Apply” to make sure the changes are applied.
- Save often

# Bridge Description Data – Description Tab

The screenshot shows a software interface for bridge data entry. On the left is a project tree with a red box around the '031390' bridge icon. The main window is titled 'Bridge ID: 031390' and 'NBI Structure ID (8): 07100030309231'. It has tabs for 'Description', 'Description (cont'd)', 'Alternatives', 'Global Reference Point', 'Traffic', and 'Custom Agency Fields'. The 'Description' tab is active, showing fields for Name (COSLAB), Year Built (1954), Description (JRG 3/17/2016, 003-03-0009, COSLAB SPANS STND PLANS C-F-S. 4-20, RC APPSLAB STND PLANS C-M-135), Location (CALCASIEU), Length (100.00 ft), Facility Carried (7) (US0090), Route Number (0090), Feat. Intersected (6) (CHOUIQUE BAYOU), Mi. Post (18.11), and Default Units (US Customary). Checkboxes for Template, Bridge Completely Defined, Superstructures, and Culverts are also present.

Bridge ID: 031390      NBI Structure ID (8): 07100030309231

☐ Template      ☒ Superstructures  
☐ Bridge Completely Defined      ☐ Culverts

Description    Description (cont'd)    Alternatives    Global Reference Point    Traffic    Custom Agency Fields

Name: COSLAB      Year Built: 1954

Description: JRG 3/17/2016  
003-03-0009  
COSLAB SPANS STND PLANS C-F-S. 4-20  
RC APPSLAB STND PLANS C-M-135

Location: CALCASIEU      Length: 100.00 ft

Facility Carried (7): US0090      Route Number: 0090

Feat. Intersected (6): CHOUIQUE BAYOU      Mi. Post: 18.11

Default Units: US Customary

First, enter the bridge description data under the first field on the bridge workspace-this is the field labeled with a bridge at the top of the tree.

LADOTD uses the following as a standard way to enter the information in the “Description” Tab

- Bridge ID – bridge recall number
- NBI Structure Number – bridge structure number
- Bridge Name – the six letter bridge type such as COSLAB, COPCSS
- Description – this should include the date rated, initials of the rater, name of consulting firm if applicable, standards used if applicable, project number and any other relevant information.
- Other fields are self-explanatory.

# Bridge Description Data – Description (cont'd)Tab

The screenshot displays the 'Bridge Description Data' software interface. On the left is a project tree with the following structure:


- 031390 (highlighted)
- Materials
- Beam Shapes
- Appurtenances
- Connectors
- Diaphragm Definitions
- Lateral Bracing Definitions
- Impact / Dynamic Load Allowance
- MPF LRFD Multiple Presence Factors
- Factors
- LRFD Substructure Design Settings
- EC Environmental Conditions
- DP Design Parameters
- SUPERSTRUCTURE DEFINITIONS
- Spans 1-5
- BRIDGE ALTERNATIVES
- Bridge Alternative #1 (E) (C)
  - SUPERSTRUCTURES
  - Stiffness Analysis
  - PIERS

The main panel shows the 'Description (cont'd)' tab. At the top, there are input fields for 'Bridge ID: 031390' and 'NBI Structure ID (8): 07100030309231'. To the right of these are checkboxes for 'Template', 'Bridge Completely Defined', 'Superstructures' (checked), and 'Culverts'. Below these are several tabs: 'Description', 'Description (cont'd)' (active), 'Alternatives', 'Global Reference Point', 'Traffic', and 'Custom Agency Fields'. The 'Description (cont'd)' tab contains the following fields:

- District (2): 07
- County: Calcasieu
- Owner (22): State Highway Agency
- Maintainer:
- Admin. Area:
- NHS Indicator:
- Functional Class: 07 Rural Mjr Collector

On this tab, enter the district, parish (county), owner, and functional class.

# Bridge Description Data – Alternatives Tab



The screenshot displays the 'Alternatives' tab within a bridge design software interface. On the left, a project tree shows the hierarchy: 031390 (highlighted) > BRIDGE ALTERNATIVES > Bridge Alternative #1 (E) (C). The main panel shows the 'Alternatives' tab selected, with fields for Bridge ID (031390) and NBI Structure ID (07100030309231). Checkboxes for 'Template', 'Bridge Completely Defined', 'Superstructures' (checked), and 'Culverts' are visible. Below these is a table with columns: Existing, Current, Bridge Alternative Name, and Description. The table contains one row for 'Bridge Alternative #1' with both 'Existing' and 'Current' checkboxes checked.

Existing	Current	Bridge Alternative Name	Description
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Bridge Alternative #1	

On this tab, the Bridge Alternative you defined should be selected. If you have not defined an alternative, we will cover that in a later slide. Every bridge must have at least one alternative.

# Bridge Description Data – Traffic Tab

Bridge ID: 031390 NBI Structure ID (8): 07100030309231

☐ Template ☒ Superstructures  
☐ Bridge Completely Defined ☐ Culverts

Description Description (cont'd) Alternatives Global Reference Point Traffic Custom Agency Fields

Truck PCT: 4 %

ADT: 6800

Directional PCT: 55.0 %

Recent ADTT: 149

Design ADTT:

Est. annual traffic growth rate: %

Fatigue importance factor: Main Arterial, Interstate, Other

☐ Importance factor override

Enter the traffic data from the bridge. The ADT should be available from the bridge inspection report, and the truck PCT should be available from the main structure record. The directional % is based on the functional classification of the road.

# Bridge Description Data – Other Tabs

The screenshot displays the Bridge Description Data software interface. On the left is a project tree with the following structure:

- 031390
  - Materials
  - Beam Shapes
  - Appurtenances
  - Connectors
  - Diaphragm Definitions
  - Lateral Bracing Definitions
  - Impact / Dynamic Load Allowance
  - MPF LRFD Multiple Presence Factors
  - Factors
    - LRFD Substructure Design Settings
  - EC Environmental Conditions
  - DP Design Parameters
  - SUPERSTRUCTURE DEFINITIONS
    - Spans 1-5
  - BRIDGE ALTERNATIVES
    - Bridge Alternative #1 (E) (C)
      - SUPERSTRUCTURES
        - Stiffness Analysis
      - PIERS

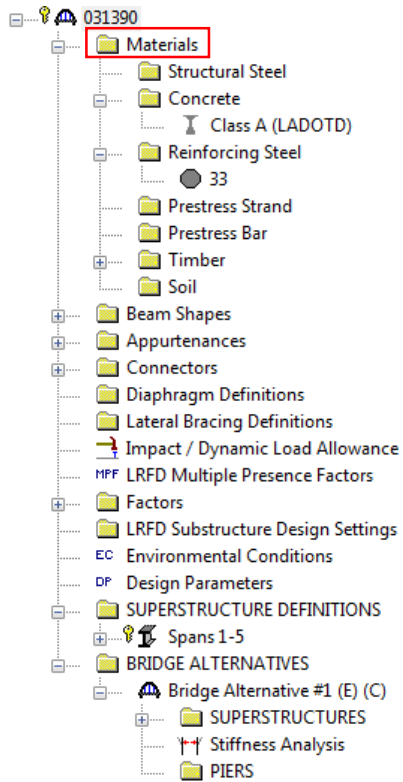
The main panel on the right shows the 'Global Reference Point' tab selected. At the top, the 'Bridge ID' is 031390 and the 'NBI Structure ID (8)' is 07100030309231. Checkboxes for 'Template', 'Bridge Completely Defined', 'Superstructures' (checked), and 'Culverts' are present. The 'Global Reference Point' tab contains the following data fields:

Field	Value	Unit
Truck PCT:	4	%
ADT:	6800	
Directional PCT:	55.0	%
Recent ADTT:	149	
Design ADTT:		
Est. annual traffic growth rate:		%
Fatigue importance factor:	Main Arterial, Interstate, Other	
Importance factor override	<input type="checkbox"/>	

The 'Custom Agency Fields' tab is also visible and highlighted with a red box.

Typically we do not enter data on the “Global Reference Point” or “Custom Agency Fields Tabs”.

# Materials Data



Name:  Description:

Compressive strength at 28 days ( $f'_c$ ) =	<input type="text" value="3.000"/>	ksi
Initial compressive strength ( $f'_{ci}$ ) =	<input type="text"/>	ksi
Coefficient of thermal expansion =	<input type="text" value="0.0000060000"/>	1/F
Density (for dead loads) =	<input type="text" value="0.150"/>	kcf
Density (for modulus of elasticity) =	<input type="text" value="0.145"/>	kcf
Std Modulus of elasticity ( $E_c$ ) =	<input type="text" value="3155.92"/>	ksi
LRFD Modulus of elasticity ( $E_c$ ) =	<input type="text" value="3155.92"/>	ksi
Std Initial modulus of elasticity =	<input type="text" value="0.00"/>	ksi
LRFD Initial modulus of elasticity =	<input type="text" value="0.00"/>	ksi
Poisson's ratio =	<input type="text" value="0.200"/>	
Composition of concrete =	<input type="text" value="Normal"/>	
Modulus of rupture =	<input type="text" value="0.416"/>	ksi
Shear factor =	<input type="text" value="1.000"/>	
Splitting tensile strength ( $f_{ct}$ ) =	<input type="text"/>	ksi

Concrete

Name:  Description:

Material Properties

Specified yield strength ( $F_y$ ) =	<input type="text" value="33.000"/>	ksi
Modulus of elasticity ( $E_s$ ) =	<input type="text" value="29000.00"/>	ksi
<i>Ultimate strength (<math>F_u</math>) =</i>	<input type="text" value="58.000"/>	ksi

Type

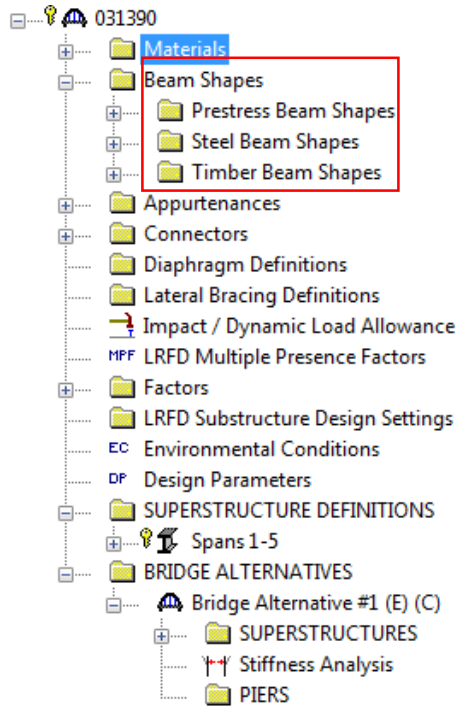
- ☒ Plain
- ☐ Epoxy
- ☐ Galvanized
- ☐ Other

Steel

After describing the bridge, you will next enter material data. Here are some examples for concrete and steel. If you wish, once you enter the data for your material, you can “Copy to Library” (located at bottom right of screen) and the software will save your data. You can then “Copy from Library” in the future instead of always re-entering your material properties.

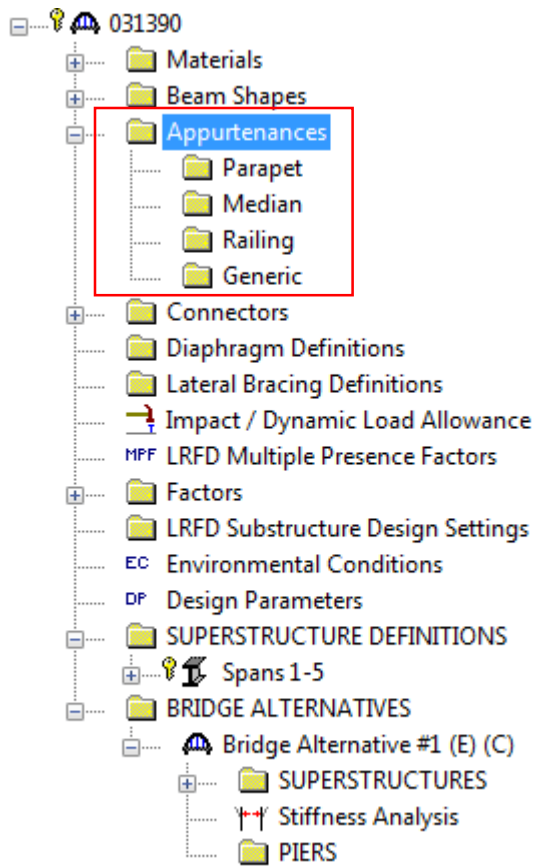


# Beam Shapes



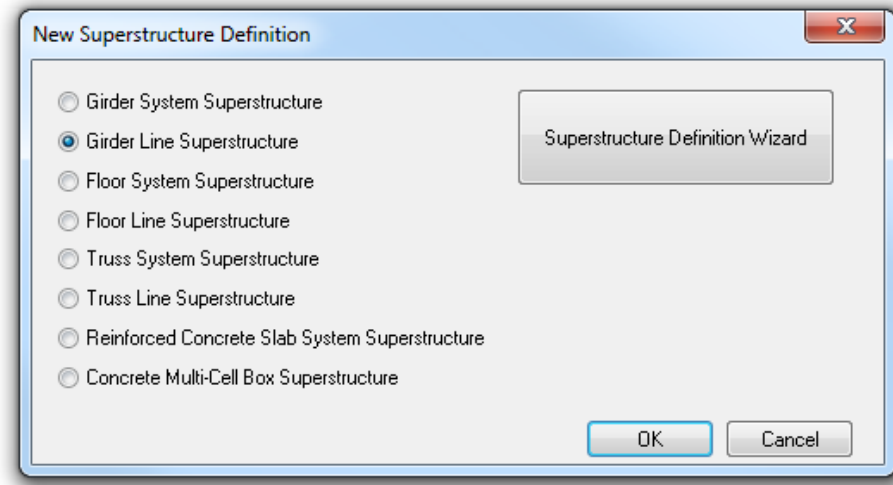
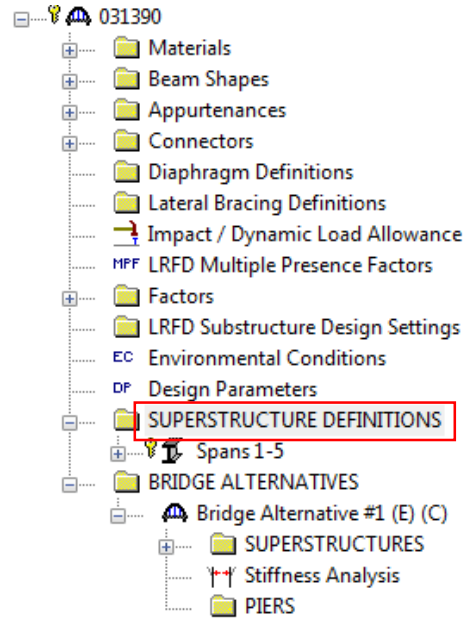
Since the COSLAB bridge is being entered as a reinforced concrete slab, we will not need to define any beam shapes. We will enter the slab later under the “Superstructure Definitions” section.

# Appurtenances



Since a COSLAB is a girderline structure, and we will not be defining a Structure Typical Section for a girderline structure, we do not need to define any “Appurtenances”. The dead load due to the appurtenances will be entered later as member loads.

# Superstructure Definitions



Next, you will create a new superstructure definition for your bridge. Double click the Superstructure Definitions folder, and a “New Superstructure Definition” window will pop up.

Select “Girder Line Superstructure.”

# Superstructure Definitions – Definition Tab

Definition

Analysis

Engine

Name: Spans 1-5

Description: Bridge is 100 ft long, spans are 20ft long per C.F.S-4-20

Deck type: Concrete

Default Units: US Customary

For PS only  
Average humidity: %

Reference line length: ft  
Live Load Lanes  
☒ Multi-Lane  
☐ Single Lane  
LRFD Fatigue  
Truck lanes:   
☐ Override  
Truck fraction:

Member Alt. Types  
☐ Steel  
☐ P/S  
☒ R/C  
☐ Timber

Fill out the necessary information in the fields. Describe the bridge spans. The deck type is Concrete, and the Member Alt. Types should be R/C.

# Superstructure Definitions – Analysis Tab

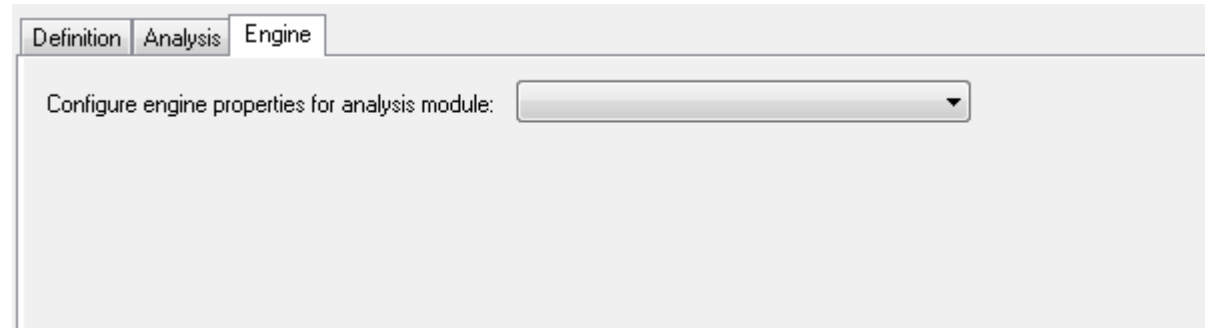


The image shows a software interface with three tabs: 'Definition', 'Analysis', and 'Engine'. The 'Analysis' tab is selected. Inside the 'Analysis' tab, there is a section titled 'Structural Slab Thickness' which contains two checked checkboxes:

- ☒ Consider structural slab thickness for rating
- ☒ Consider structural slab thickness for design

“Consider the structural slab thickness for rating” should be selected.

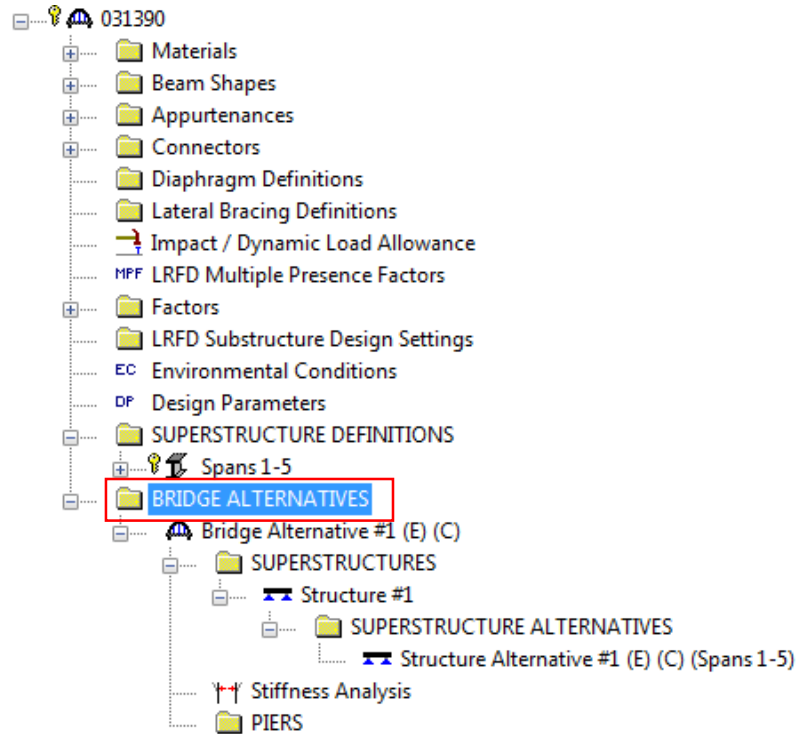
# Superstructure Definitions – Engine Tab



The screenshot shows a software window with three tabs: 'Definition', 'Analysis', and 'Engine'. The 'Engine' tab is selected. Inside the 'Engine' tab, there is a label 'Configure engine properties for analysis module:' followed by a dropdown menu. The dropdown menu is currently empty, showing only a downward-pointing arrow.

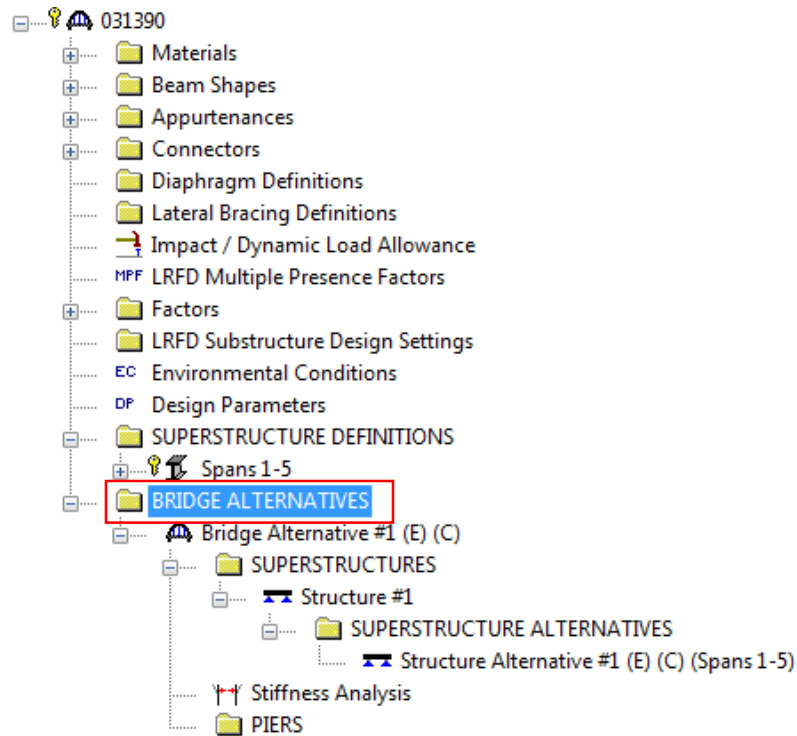
It is not necessary to make a selection here, BrR will use the default analysis engine.

# Bridge Alternatives



Now we need to go back to the Bridge Alternatives folder and create a new Bridge Alternative, a new Superstructure, and a new Superstructure Alternative. For each bridge, you must have at least one Bridge Alternative, a Superstructure, and a Superstructure Alternative defined or the analysis will not run.

# Bridge Alternatives



Alternative Name: Bridge Alternative #1

Description Substructures

Description:

☐ Horizontal curvature

Reference Line Length =  ft

☒ Start bearing ☐ End bearing

Starting Station =  ft

Bearing = S 89° 59' 54.57" E

Global Positioning

Distance =  0.000 ft

Offset =  0.000 ft

Elevation =  ft

Bridge Alignment

☒ Curved

☐ Tangent, curved, tangent

☐ Tangent, curved

☐ Curved, tangent

Start tangent length:  ft

Curve length:  ft

Radius:  ft

Direction: Left

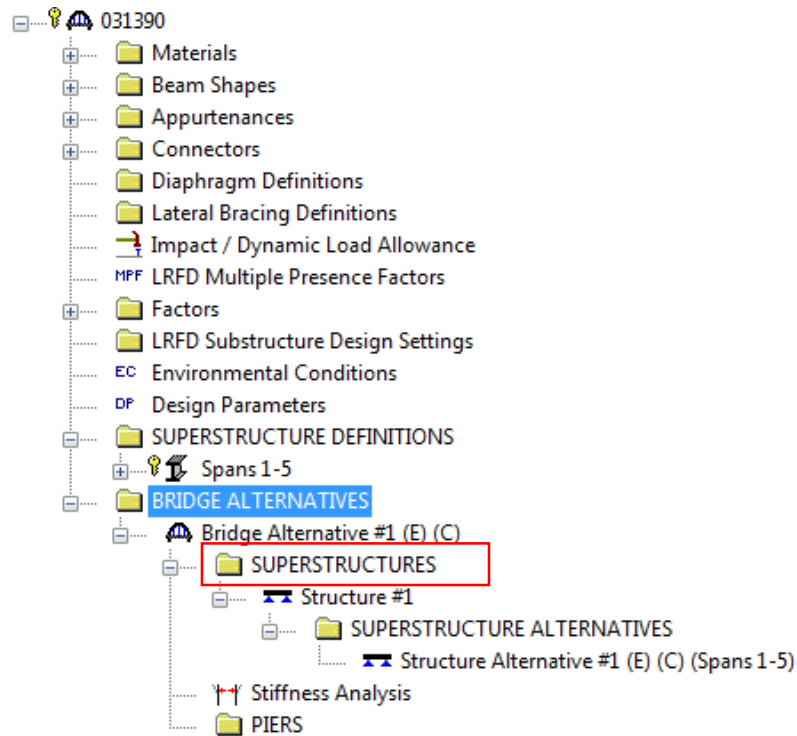
End tangent length:  ft

Superstructure Wizard... Culvert Wizard...

Enter a name for the alternative at the top. You can leave the rest of the information blank.



# Bridge Alternatives - Superstructures



Superstructure Name:

Description Alternatives Vehicle Path Engine Substructures

Description:

Reference Line

Distance =  ft

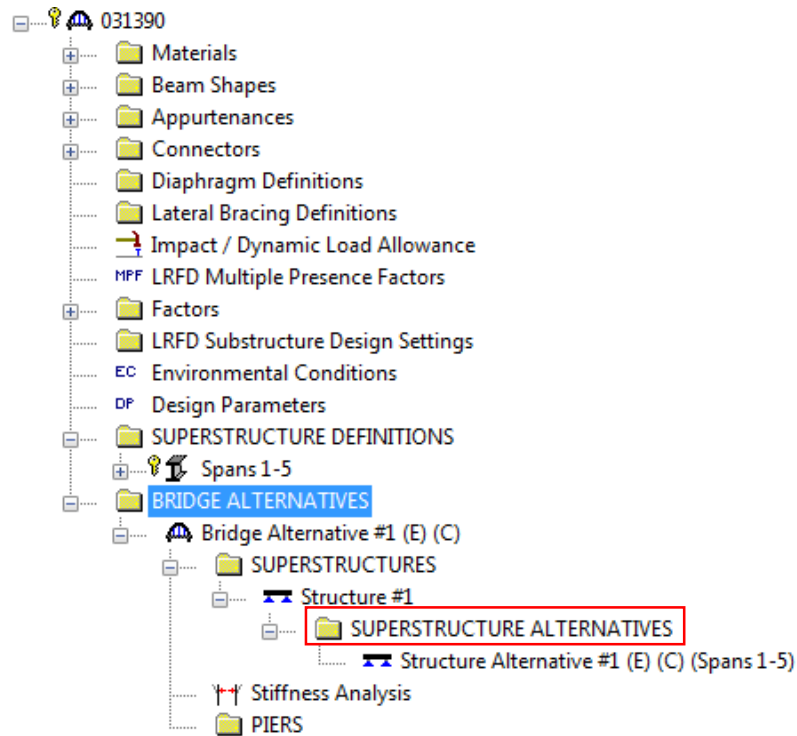
Offset =  ft

Angle =  Degrees

Starting Station =  ft

Enter a name for the superstructure at the top. You can leave the rest of the information blank.

# Bridge Alternatives – Superstructure Alternatives



Alternative Name:

Description:

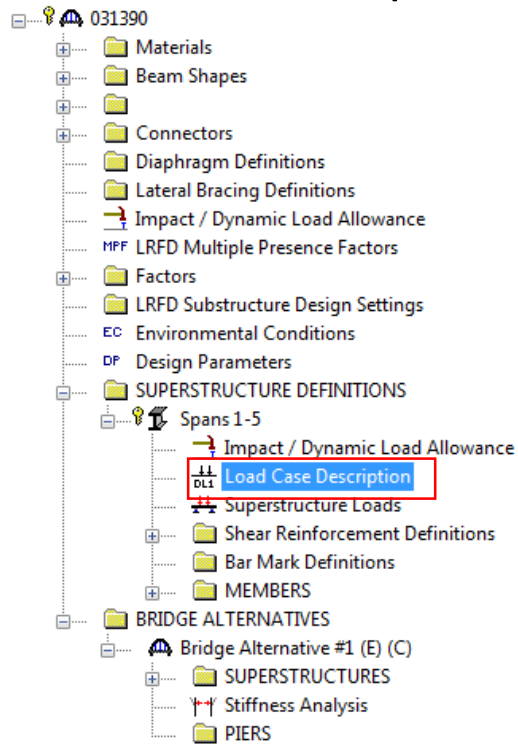
Superstructure Definition:

Superstructure type:

Number of main members:

Enter a name for the superstructure alternative at the top. Select the Superstructure Definition from the drop down menu at the bottom, for a COSLAB bridge you will usually only have one type of superstructure definition.

# Superstructure Definitions – Load Case Description



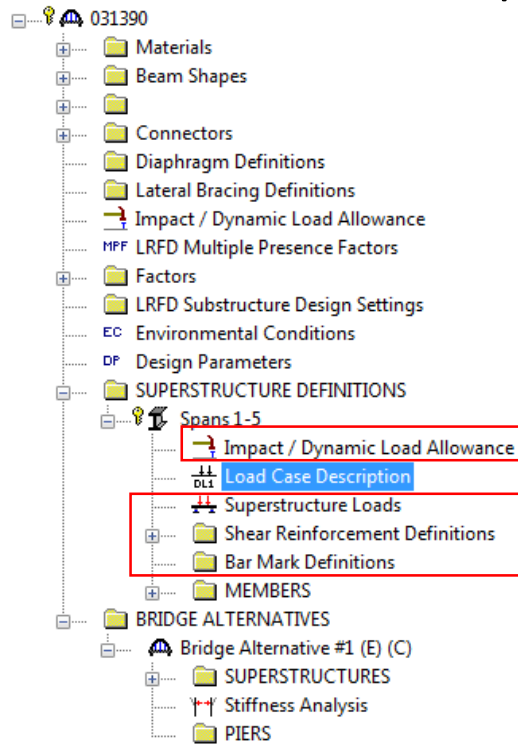
Load Case Name	Description	Stage	Type	Time* (Days)
Railing		Composite (long term) (Stage 2)	D,DC	
Wearing Surface		Composite (long term) (Stage 2)	D,DW	

\*Prestressed members only

Add Default Load Case Descriptions

You will need to enter the load case descriptions for the member loads you will enter shortly. You can manually enter them or “Add Default Load Case Descriptions.” You want to make sure that you are matching the correct load type and stage with the loads you enter so that the correct load factors are applied per the AASHTO code. Typically a COSLAB bridge will need to have loads entered for the bridge railing and wearing surface.

# Superstructure Definitions – Additional Tabs



Default values are used in the Impact/Dynamic Load Allowance Tabs (see below), and no data is required to be entered for this type of bridge under the Superstructure Loads, Shear Reinforcement Definitions, and Bar Mark Definitions fields. Reinforcement bar definitions can be entered later in the Members section, which will be described next.

Standard Impact Factor

For structural components where impact is to be included per AASHTO 3.8.1, choose the impact factor to be used:

☒ Standard AASHTO impact  $I = \frac{50}{L + 125}$

☐ Modified impact =  times AASHTO impact

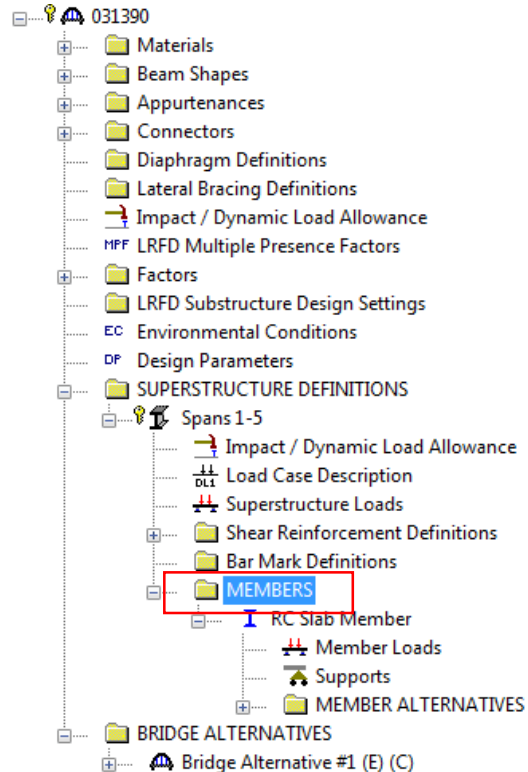
☐ Constant impact override =  %

LRFD Dynamic Load Allowance

Fatigue and fracture limit states:  %

All other limit states:  %

# Superstructure Definitions – Members



Member name:

Description:

☐ Frame Member  
☐ Simplified Definition

Existing	Current	Member Alternative Name	Description
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	12" Wide RC Slab	

Number of spans:

Girder spacing:

Span No.	Span Length (ft)
1	19.25

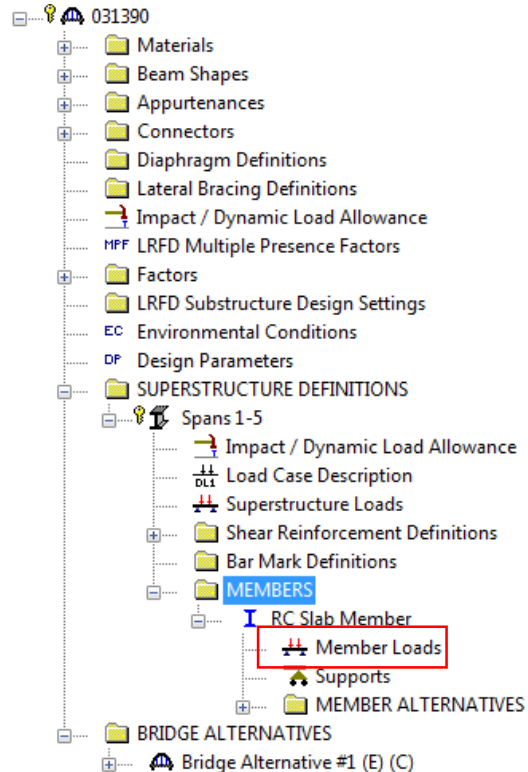
Deck concrete crack control parameter (Z):  kip/in

Member Location:  
☒ Interior  
☐ Exterior

Deck exposure factor:

Next, you will double click the Members folder and add a new member. Give it a member name and description. Indicate the number of spans (will be one for a COSLAB), the Span Length (measured from cap CL to CL), and Member Location (Interior for a COSLAB). For a COSLAB, the member we will be defining is a 12" wide strip of slab.

# Superstructure Definitions – Members – Member Loads

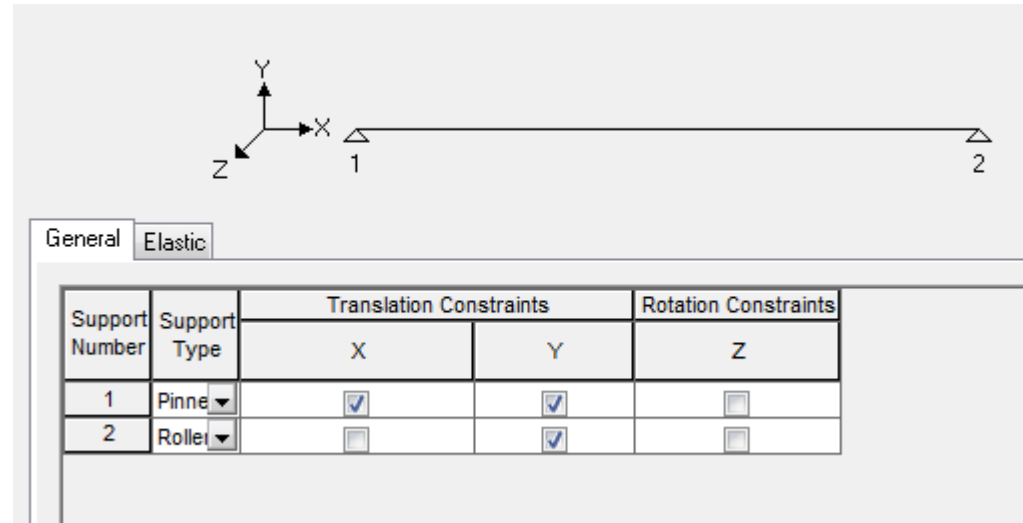
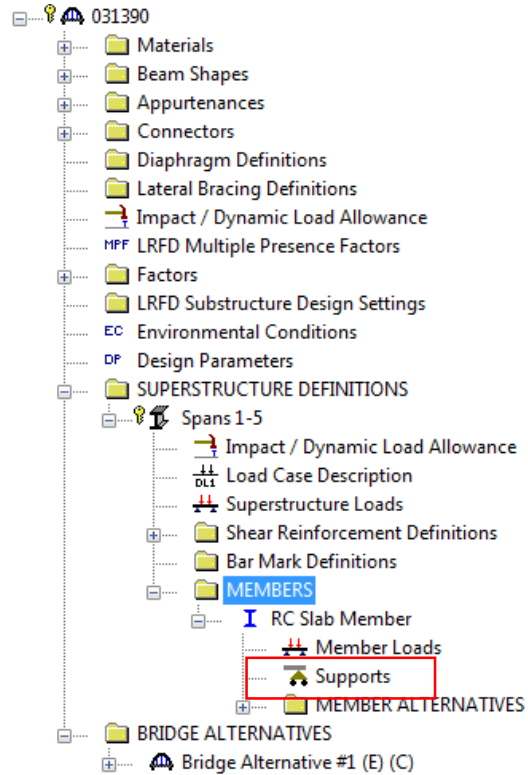


We will now define our member loads associated with the Load Cases we entered earlier. Go to the Uniform loads tab. Click “New” at the bottom right of the window to add a new load case. A load case will be added and you can select the appropriate case from the drop down menu, and enter the associated uniform load you have calculated. This uniform load is a constant value that acts over the entire length of the span.

# Notes on Railing and Wearing Surface Loads

- To calculate the load on the COSLAB member from the railing and curb, calculate the weight of 2 railings + curbs for the 2 sides of the bridge, and divide by the bridge width to get the Uniform Load of the railing+curb.
- To calculate the load on the COSLAB member from the wearing surface, multiply the thickness of the wearing surface by the unit weight of the wearing surface (typically asphalt) to obtain the Uniform Load

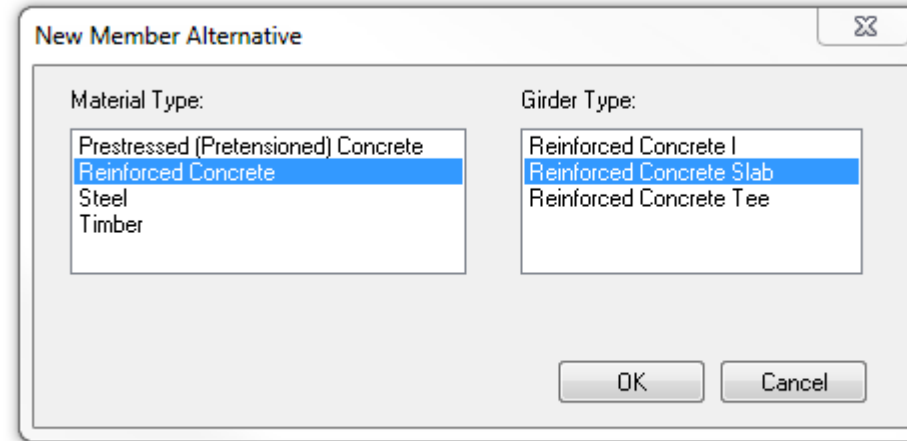
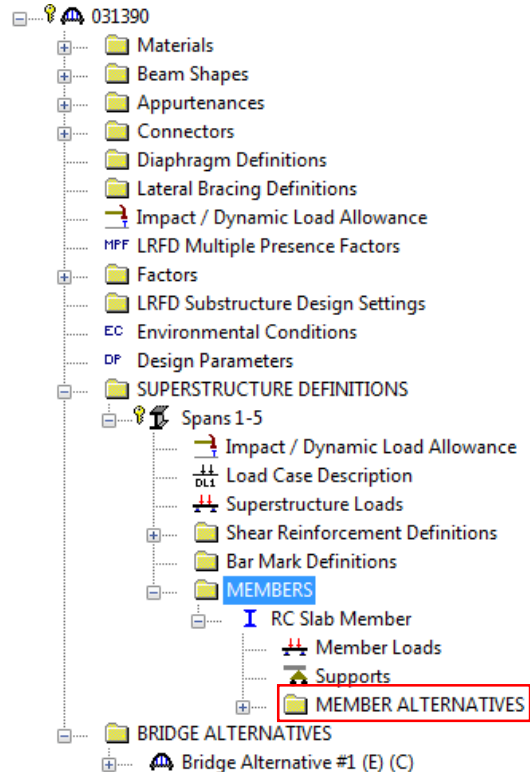
# Superstructure Definitions – Members – Supports



On the “Supports” field, double check that there are 2 supports generated, one being a pin and one a roller.



# Superstructure Definitions – Members – Member Alternatives



Next we need to define “Member Alternatives” for our bridge. Select Reinforced Concrete for the Material Type and Reinforced Concrete Slab for the Girder Type. A window will pop up, allowing you to enter data specific to your member, a 12” wide strip of slab.

# Superstructure Definitions – Members – Member Alternatives-Description Tab

The image displays a software interface for defining superstructure members. On the left is a project tree with the following structure:

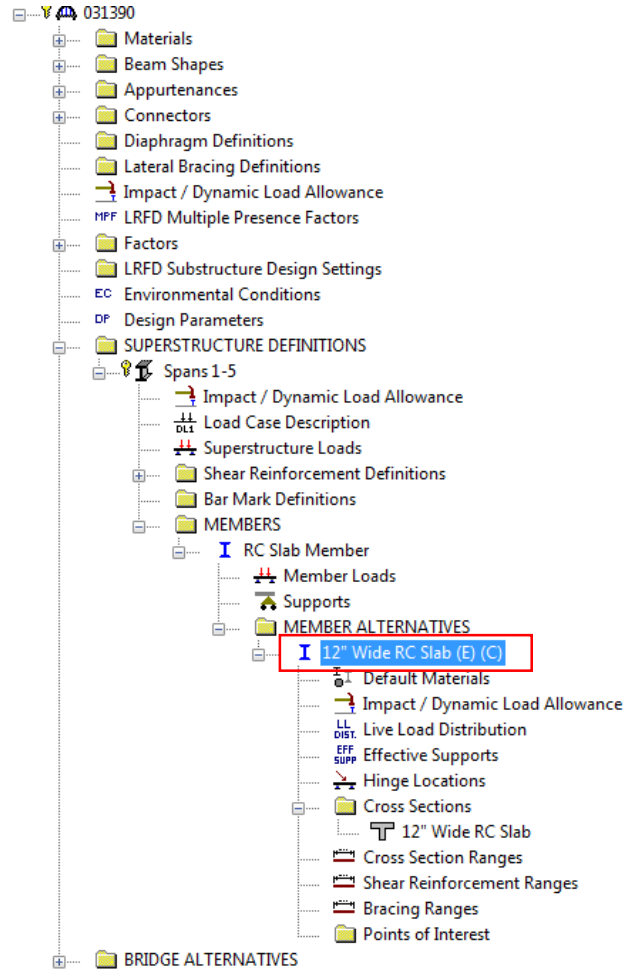
- 031390
  - Materials
  - Beam Shapes
  - Appurtenances
  - Connectors
  - Diaphragm Definitions
  - Lateral Bracing Definitions
  - Impact / Dynamic Load Allowance
  - MPF LRFD Multiple Presence Factors
  - Factors
  - LRFD Substructure Design Settings
  - EC Environmental Conditions
  - DP Design Parameters
  - SUPERSTRUCTURE DEFINITIONS
    - Spans 1-5
      - Impact / Dynamic Load Allowance
      - Load Case Description
      - Superstructure Loads
      - Shear Reinforcement Definitions
      - Bar Mark Definitions
      - MEMBERS
        - RC Slab Member
          - Member Loads
          - Supports
          - MEMBER ALTERNATIVES
            - 12" Wide RC Slab (E) (C)

The main panel on the right is titled "Member Alternative: 12" Wide RC Slab" and contains the following settings:

- Description:** (Empty text box)
- Material Type:** Reinforced Concrete
- Girder Type:** Reinforced Concrete Slab
- Default Units:** US Customary
- Girder property input method:** ☒ Cross-section based
- End bearing locations:** Left: [ ] in, Right: [ ] in
- Sustained modular ratio factor:** 2.000
- Self Load:** Load case: Engine Assigned
- Additional self load:** 0.000 kip/ft
- Additional self load:** [ ] %
- Crack control parameter (Z):** Bottom of slab: [ ] kip/in
- Exposure factor:** Bottom of slab: [ ]
- Default rating method:** LRFR

Enter a name for the Member Alternative, which is a 12" wide strip of concrete slab. The Girder Property Input Method should be Cross-section based for the COSLAB bridge. Make sure that the Default Rating Method selected is LRFR.

# Superstructure Definitions – Members – Member Alternatives-Specs Tab



Member Alternative: 12" Wide RC Slab

Description	Specs	Factors	Engine	Import	Control Options
Analysis Method Type	Analysis Module	Selection Type	Spec Version	Factors	
ASD	AASHTO ASD	System Default	MBE 2nd 2016i, Std 17th	N/A	
LFD	AASHTO LFD	System Default	MBE 2nd 2016i, Std 17th	2002	
LRFD	AASHTO LRFD	System Default	LRFD 7th 2016i	2014	
LRFR	AASHTO LRFR	System Default	MBE 2nd 2016i, LRFD 7th 2016i	2011	

Make sure AASHTO ASD, AASHTO LFD, AASHTO LRFD, AASHTO LRFR are selected under the Analysis Module.

# Superstructure Definitions – Members – Member Alternatives-Factors Tab

The screenshot displays the software interface for defining bridge members. On the left is a project tree with the following structure:

- 031390
  - Materials
  - Beam Shapes
  - Appurtenances
  - Connectors
  - Diaphragm Definitions
  - Lateral Bracing Definitions
  - Impact / Dynamic Load Allowance
  - MPF LRFD Multiple Presence Factors
  - Factors
  - LRFD Substructure Design Settings
  - EC Environmental Conditions
  - DP Design Parameters
  - SUPERSTRUCTURE DEFINITIONS
    - Spans 1-5
      - Impact / Dynamic Load Allowance
      - Load Case Description
      - Superstructure Loads
      - Shear Reinforcement Definitions
      - Bar Mark Definitions
      - MEMBERS
        - RC Slab Member
          - Member Loads
          - Supports
          - MEMBER ALTERNATIVES
            - 12" Wide RC Slab (E) (C)
            - Default Materials
            - Impact / Dynamic Load Allowance
            - LL DIST Live Load Distribution
            - EFF SUPP Effective Supports
            - Hinge Locations
            - Cross Sections
              - 12" Wide RC Slab
            - Cross Section Ranges
            - Shear Reinforcement Ranges
            - Bracing Ranges
            - Points of Interest

- BRIDGE ALTERNATIVES

The main window shows the 'Member Alternative: 12" Wide RC Slab' and the 'Factors' tab. The 'LRFR' section includes:

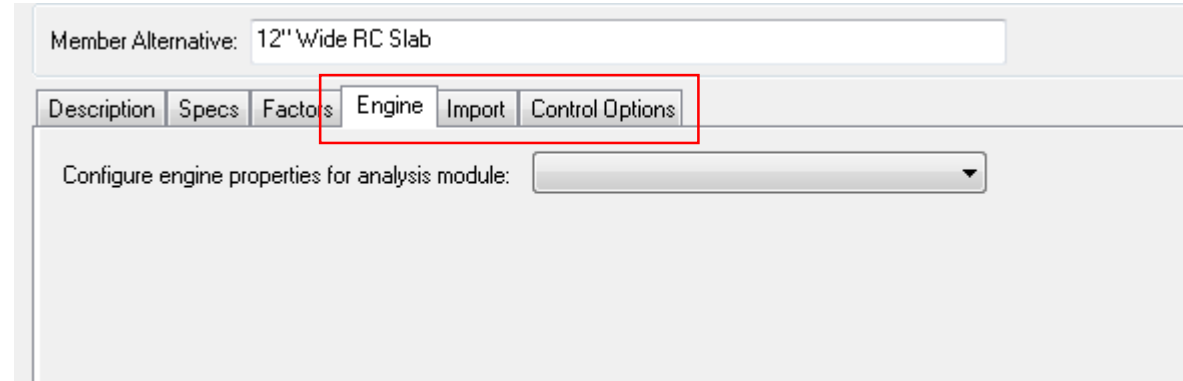
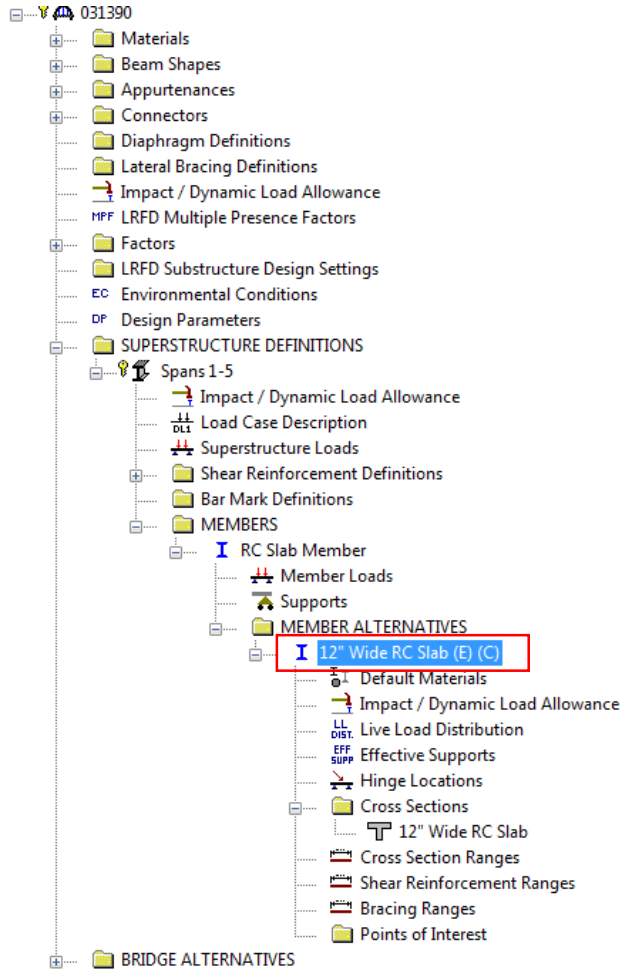
- Condition Factor: Fair
- ☐ Field measured section properties
- System Factor: All Other Girder/Slab Bridges
- ☐ System factor override

The 'ASD Factors' section includes a table for material and component factors:

	INVY	OPER
Structural steel	<input type="text"/>	<input type="text"/>
Concrete	<input type="text"/>	<input type="text"/>
P/S Concrete Comp.	<input type="text"/>	<input type="text"/>
P/S Concrete Tens.	<input type="text"/>	<input type="text"/>
P/S Moment Cap.	<input type="text"/>	<input type="text"/>
Reinforcement	<input type="text"/>	<input type="text"/>
Bearing stiffener	<input type="text"/>	<input type="text"/>
Stirrup	<input type="text"/>	<input type="text"/>
Timber		<input type="text"/>

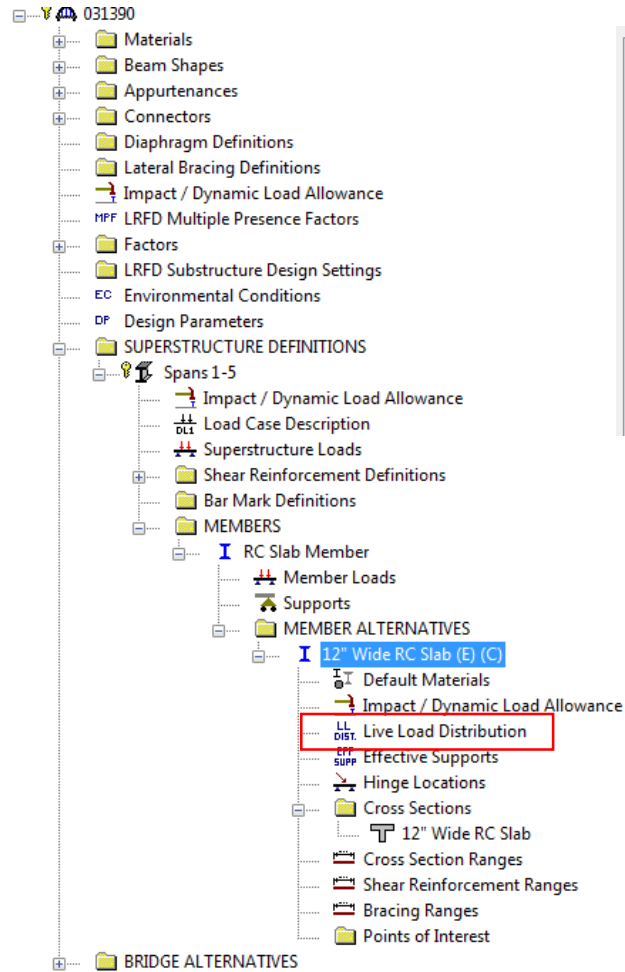
On this tab, you will select the condition of the bridge according the AASHTO Manual for Bridge Evaluation, Good or Satisfactory, Fair, or Poor. The system factor should be All Other Girder/Slab Bridges.

## Superstructure Definitions – Members – Other Tabs



The default options selected by the program are sufficient for this bridge type for the Engine, Import, and Control Options tabs.

# Superstructure Definitions – Members – Live Load Distribution



Standard LRFD

Distribution Factor Input Method

☒ Use Simplified Method ☐ Use Advanced Method ☐ Use Advanced Method with 1994 Guide Specs

☐ Allow distribution factors to be used to compute effects of permit loads with routine traffic

Lanes Loaded	Distribution Factor (Wheels)			
	Shear	Shear at Supports	Moment	Deflection
1 Lane				
Multi-Lane				

Live Load Distribution factors should be entered for the Standard and LRFD tabs. Enter these factors per the AASHTO code. On the Standard tab, you can enter the LL distribution factors per ASD/LFD. On the LRFD tab, you can elect to Compute from Typical Section, and the software will compute the LRFD LL distribution factors per the latest AASHTO LRFD Bridge Design Specifications. If you enter manually, make sure to enter factors for Deflection, Moment, and Shear by changing the Action drop down menu.

Standard LRFD

Distribution Factor Input Method

☒ Use Simplified Method ☐ Use Advanced Method

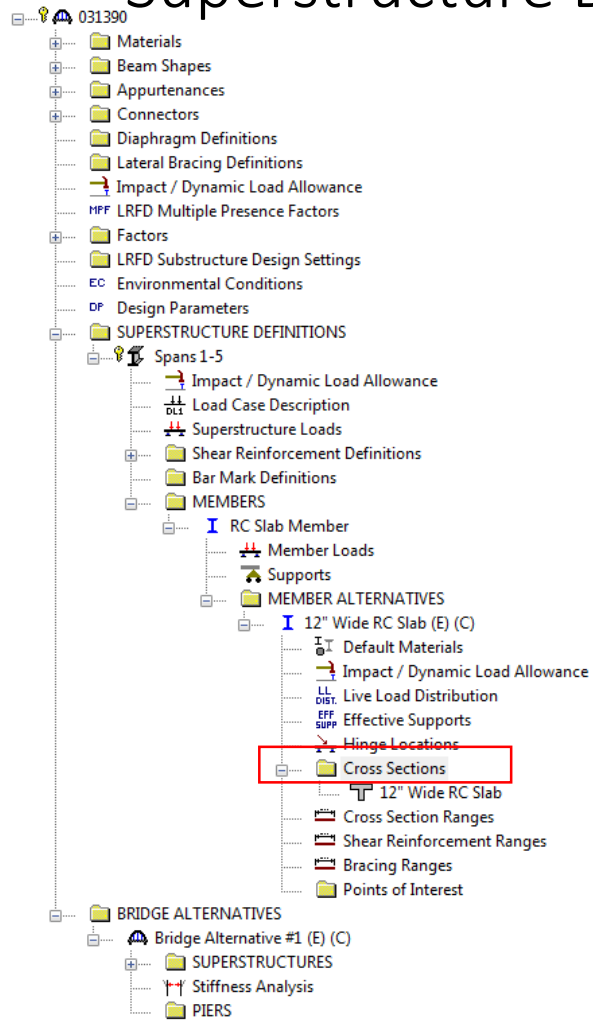
☒ Allow distribution factors to be used to compute effects of permit loads with routine traffic

Action: Deflection

Support Number	Start Distance (ft)	Length (ft)	End Distance (ft)	Distribution Factor (Lanes)	
				1 Lane	Multi-Lane
1	0.00	19.250	19.25	0.100	0.083

Compute from Typical Section... View Calcs

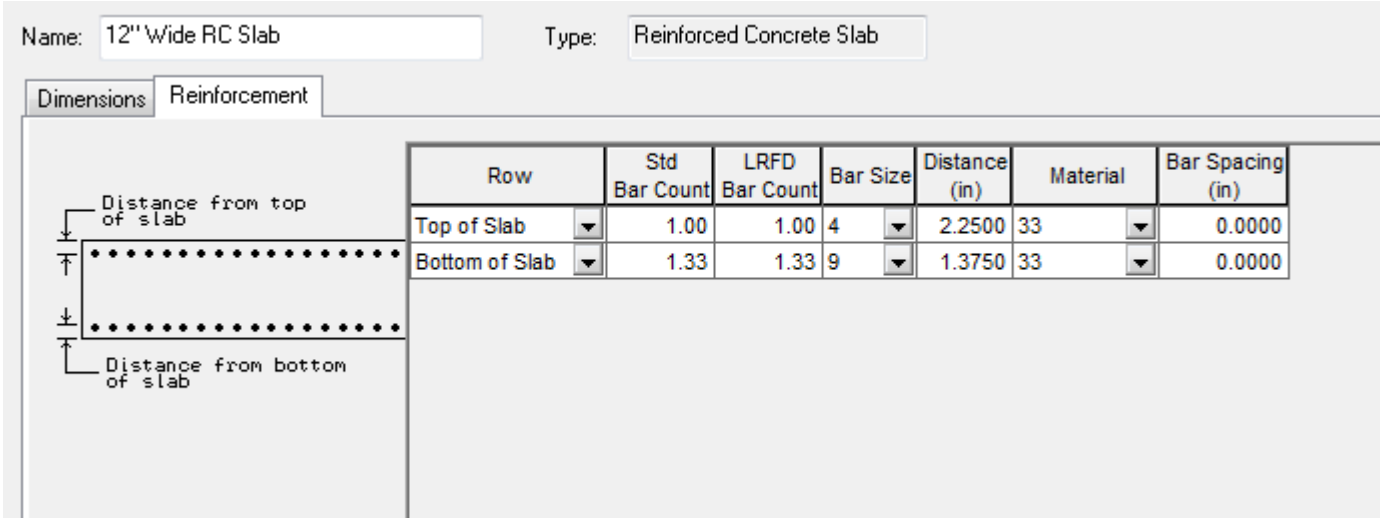
# Superstructure Definitions – Members – Cross Sections Folder-Dimensions Tab



A screenshot of a software dialog box titled '12" Wide RC Slab'. The 'Name' field contains '12" Wide RC Slab' and the 'Type' field contains 'Reinforced Concrete Slab'. The 'Dimensions' tab is selected, showing a diagram of a rectangular slab with dimensions 12.0000 in (width) and 13.5000 in (thickness). On the right, the 'Concrete Material' is set to 'Class A (LADOTD)' and the 'Modular Ratio' is set to 8.0.

Now it is time to define our slab cross section. Double click the cross section folder. In the window that pops up, enter a name for the cross section. Enter the slab cross sectional dimensions-since we are using a 12" wide strip of slab, enter 12" for the width. Enter the slab thickness, and on the right, select the concrete material (the material you entered earlier should be available in this drop down menu).

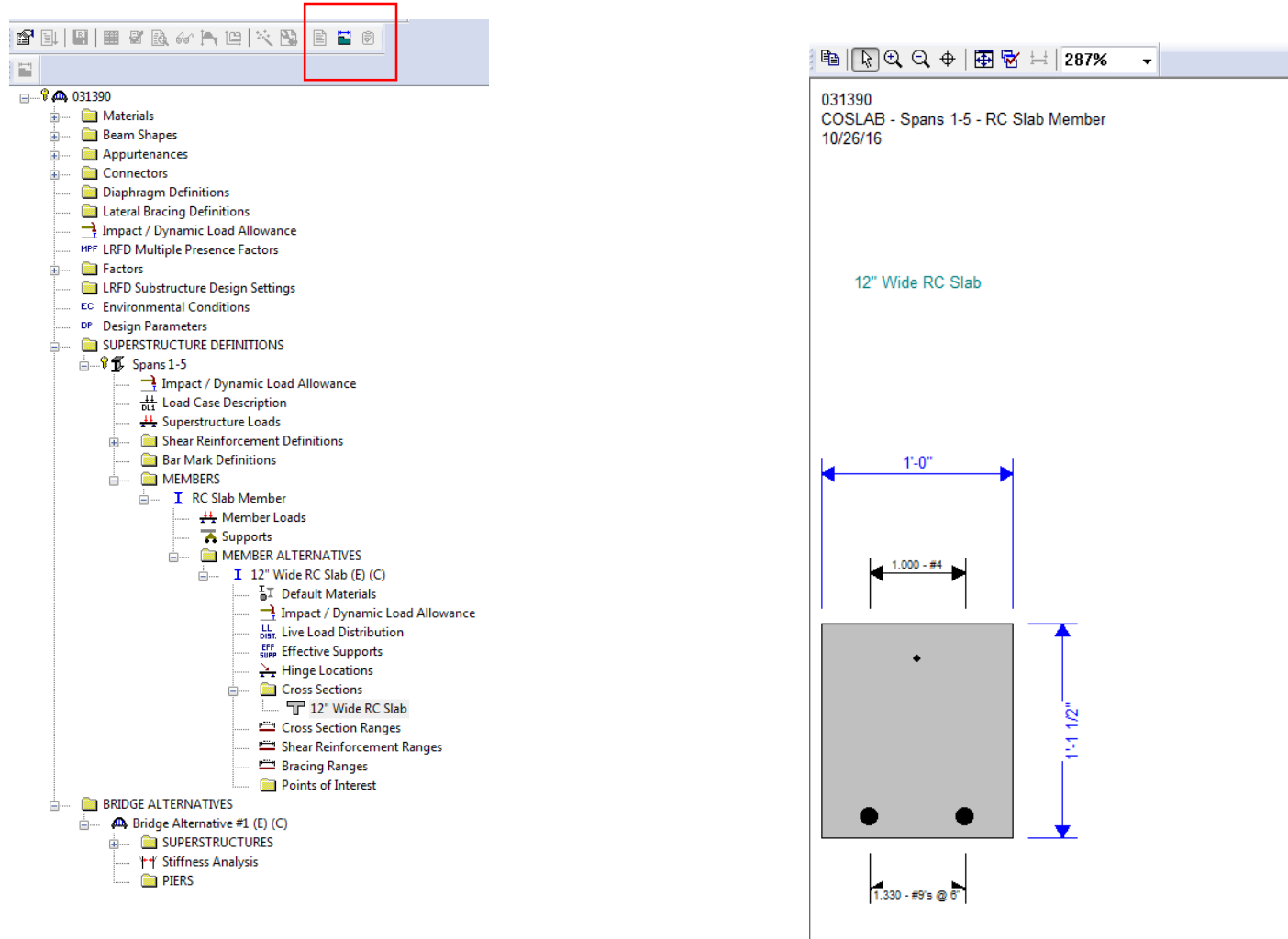
031390



Go to the Reinforcement Tab and enter the reinforcement in the top and bottom of the slab by selecting New at the bottom right. The bar counts should be entered based on the number of bars in the 12" wide strip of slab. Enter the Bar Size, Distance, Material and Bar Spacing.

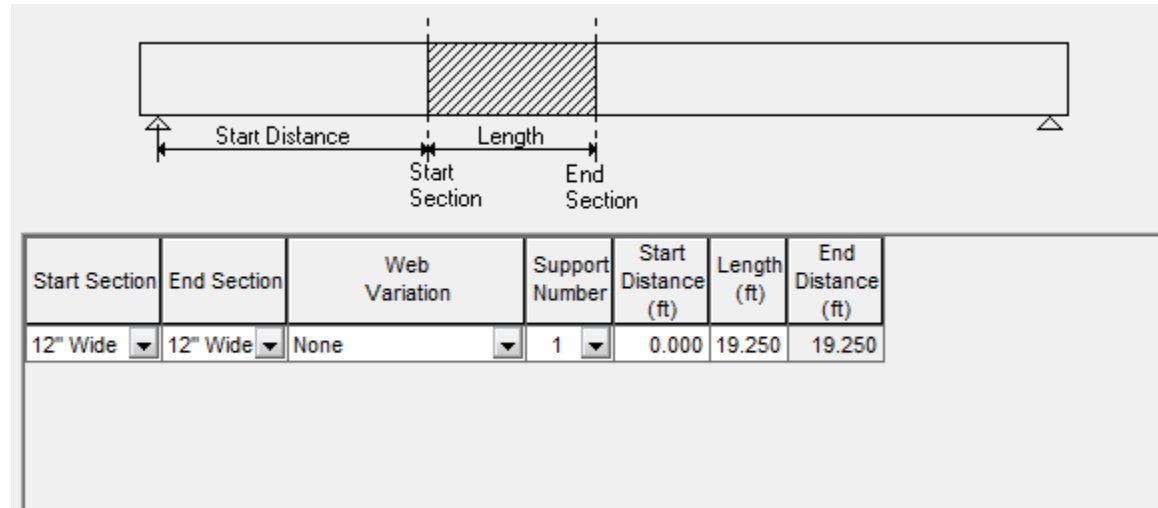
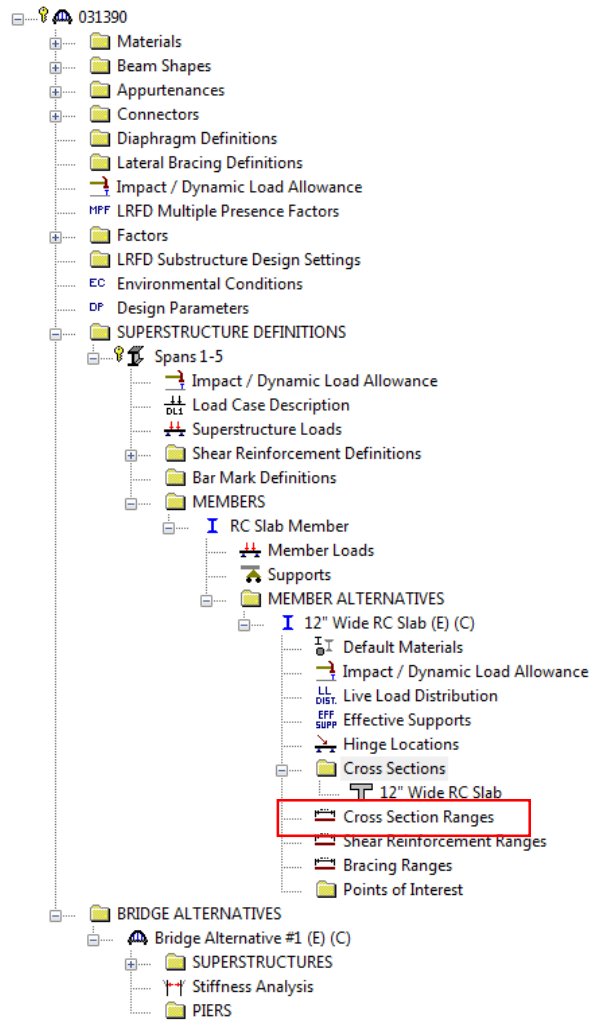


# Superstructure Definitions – Members – Cross Sections Folder



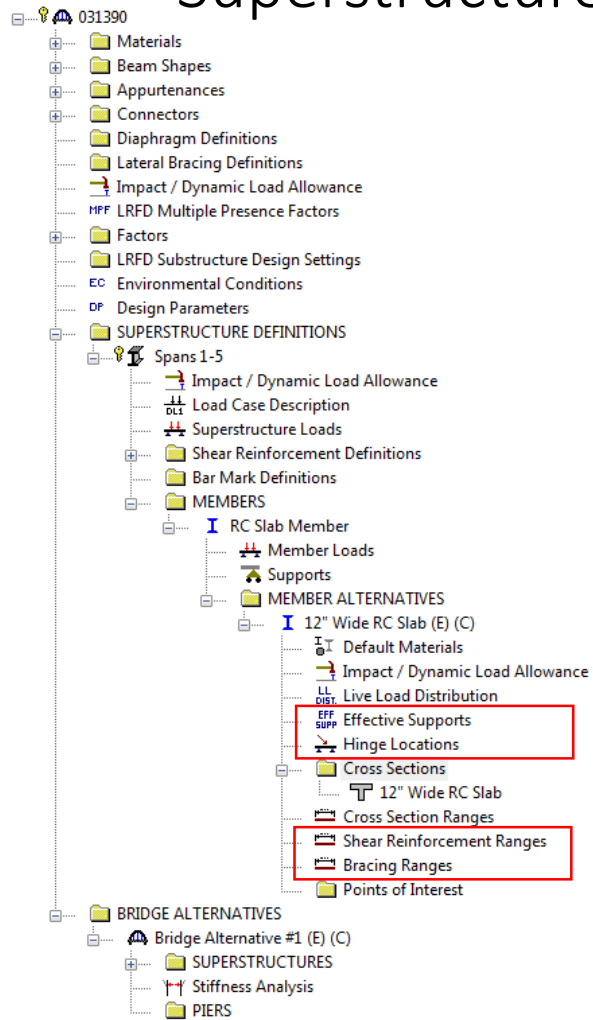
You can see a schematic of the cross section you just defined by going to the View Schematic button above the bridge workspace, see the red box. This is a way to verify that your input is correct for the cross section.

# Superstructure Definitions – Members – Cross Sections Folder-Cross Section Ranges



Now we will define the Cross Section Ranges for the bridge. This must be done in order for the analysis to run. In this case, the length of the cross section is the length of the span you defined earlier. The Start and End Sections are the Cross Section that was defined.

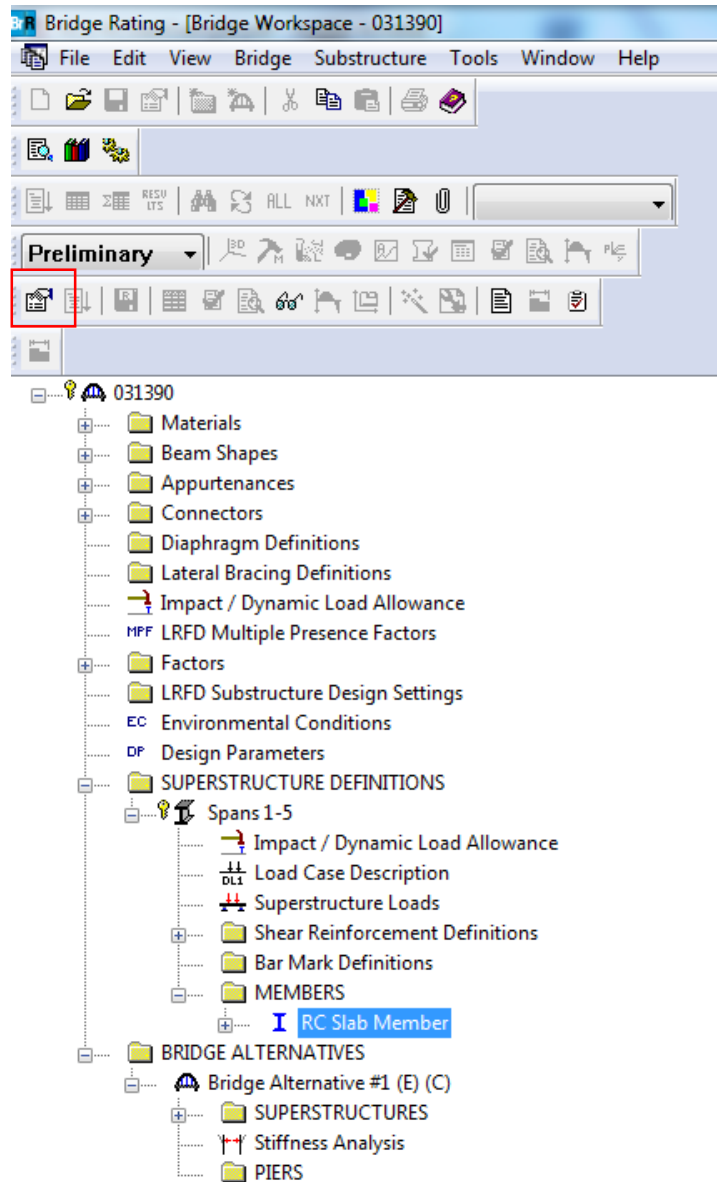
# Superstructure Definitions – Members – Cross Sections Folder-Other Fields



The Effective Supports, Hinge Locations, Shear Reinforcement Ranges, and Bracing Ranges are not applicable to this member so we will not enter data into these fields. We also do not need to define any Points of Interest.

# Bridge Analysis

It is now time to analyze the bridge. Select the View Analysis Settings button on the left above the bridge workspace.



# Bridge Analysis

The Rating Method should be LRFR. The Analysis Type should be Line Girder. Default values can be used for other fields.

☐ Design Review

☒ Rating

Rating Method: LRFR

Analysis Type: Line Girder

Lane/Impact Loading Type: As Requested

Apply Preference Setting: None

Vehicles

Output

Engine

Description

Vehicle Selection:

Vehicles

Standard

Agency

User Defined

Temporary

Traffic Direction: Both directions

Vehicle Summary:

Rating Vehicles

LRFR

Design Load Rating

Inventory

Operating

Fatigue

Legal Load Rating

Routine

Specialized Hauling

Permit Load Rating

Add to Rating

>>

Remove from Analysis

<<

Reset

Clear

Open Template

Save Template

OK

Apply

Cancel

Refresh

Temporary Vehicles...

Advanced...

# Bridge Analysis

Vehicles should be selected according to LADOTD and AASHTO Policies. Templates for typical ratings can be defined and saved.

☐ Design Review

☒ Rating

Rating Method: 

LRFR

Analysis Type: 

Line Girder

Lane/Impact Loading Type: 

As Requested

Apply Preference Setting: 

None

Vehicles

Output

Engine

Description

Vehicle Selection:

- Vehicles

+ Standard

+ Agency

+ User Defined

- Temporary

Traffic Direction:

Both directions

Add to Rating

>>

Remove from Analysis

<<

Vehicle Summary:

- Rating Vehicles

- LRFR

- Design Load Rating

- Inventory

- Operating

- Fatigue

- Legal Load Rating

- Routine

- Specialized Hauling

- Permit Load Rating

Refresh

Temporary Vehicles...

Advanced...

Reset

Clear

Open Template

Save Template

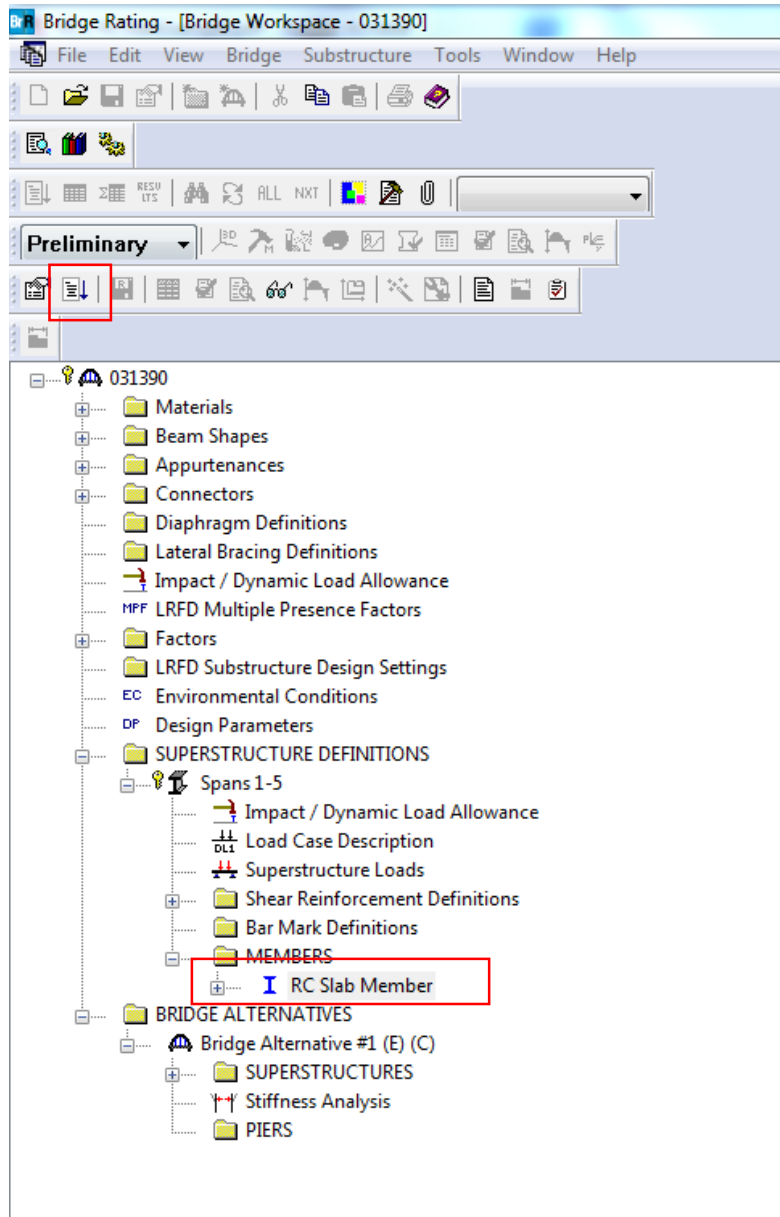
OK

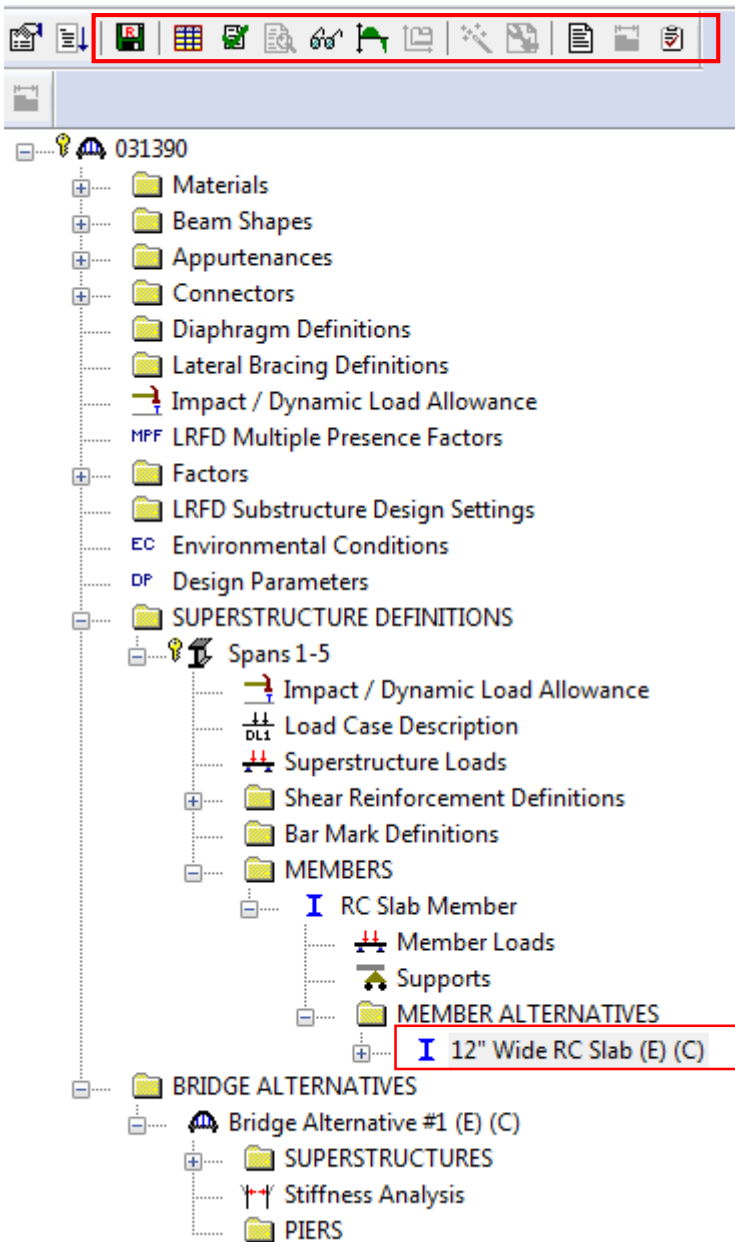
Apply

Cancel

# Bridge Analysis

After adding the appropriate vehicles, you can exit the Analysis Settings window and run the analysis. First, select the Member for which you want to run the analysis. In this case, we only have one member, the RC Slab Member. After selecting the member, go to the Analyze tab and click to run the analysis.





# Bridge Analysis - Results

When the analysis has completed, you can view the results by going to the member alternative. Select this member alternative, and several buttons that were inactive become active. Select the button that looks like a spreadsheet.



# Bridge Analysis - Results

The Rating Results Summary for the Member Alternative will display. Select the Single rating level per row to view the results in a more concise format. The results should be printed to a pdf to include in the rating report.

Report Type  
 Rating Results Summary

Lane/Impact Loading Type  
☒ As Requested   ☐ Detailed

Display Format  
 Single rating level per row

Live Load	Live Load Type	Rating Method	Rating Level	Load Rating (Ton)	Rating Factor	Location (ft)	Location Span-(%)	Limit State	Impact	Lane
HL-93 (US)	Truck + Lane	LRFR	Inventory	19.37	0.538	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
HL-93 (US)	Truck + Lane	LRFR	Operating	25.11	0.697	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
HL-93 (US)	Tandem + Lane	LRFR	Inventory	16.04	0.445	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
HL-93 (US)	Tandem + Lane	LRFR	Operating	20.79	0.577	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
Type 3-3	Axle Load	LRFR	Legal	47.84	1.196	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
LA Type 3	Axle Load	LRFR	Legal	20.24	0.987	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
LA TYPE 6	Axle Load	LRFR	Legal	36.20	0.905	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
LA TYPE 8	Axle Load	LRFR	Legal	35.88	0.815	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
LATYPE3S2	Axle Load	LRFR	Legal	34.52	0.946	9.63	1 - ( 50.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
Lane-Type Legal Load	Truck + Lane	LRFR	Legal	3960.00	99.000	0.00	1 - ( 0.0)	STRENGTH-I Concrete Flexure	As Requested	As Requested
OFRD # 1	Axle Load	LRFR	Permit	45.03	0.679	9.63	1 - ( 50.0)	STRENGTH-II Concrete Flexur	As Requested	As Requested
OFRD # 2	Axle Load	LRFR	Permit	54.00	0.758	9.63	1 - ( 50.0)	STRENGTH-II Concrete Flexur	As Requested	As Requested
OFRD # 3	Axle Load	LRFR	Permit	80.57	0.771	9.63	1 - ( 50.0)	STRENGTH-II Concrete Flexur	As Requested	As Requested

## Bridge Analysis - Results

You can also view the Specification Check, Analysis Output, Analysis Charts for the bridge analysis if you wish to view how the software computed the rating, the associated shear and moment diagrams, etc.

